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CROSS-SECTIONAL DEMOGRAPHIC CHARACTERISTICS
OF HUMAN IMMUNODEFICIENCY VIRUS SEROPOSITIVE
NAVY AND MARINE CORPS ACTIVE-DUTY PERSONNEL

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Cross-Sectional Demographic Characteristics of Human Immunodeficiency Virus Seropositive Navy and Marine Corps Active-Duty Personnel

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This report describes the demographic characteristics of HIV seropositive Navy and Marine Corps personnel on active duty on Dec 31, 1989. There were 1,200 seropositive Navy and Marine Corps personnel (point prevalence rate of 1.50 per 1,000). Officers had lower prevalence rates (Navy: 1.01, Marine: 0.41) than enlisted personnel (Navy: 1.86, Marine: 0.76). HIV seroprevalence rates were higher in men, who had a rate of 0.60 compared to 0.38 for women. Personnel aged 25 to 29 had the highest prevalence rates. The prevalence rate in blacks (3.44) was approximately three times higher than in whites (1.11) or other (1.25) races. Persons with more than 12 years of education had slightly higher rates than those with 12 or fewer years of education. An increasing trend in prevalence rates was seen with increasing length of service. Although the demographic patterns were similar for the Navy and the Marine Corps, Marine Corps rates were lower in all demographic categories.

Active-duty regular and reserve Navy and Marine Corps personnel were screened during two cycles of service-wide testing in 1986 and in 1988 for the presence of antibodies to human immunodeficiency virus (HIV), which has been found to be the etiologic agent associated with acquired immune deficiency syndrome (AIDS)(1,2). HIV testing has also been done in conjunction with overseas deployment, work in health care occupations, and routine physical examinations. The Naval Health Research Center (NHRC) maintains an HIV Central Registry which includes positive Western blot test results and demographic information for all HIV seropositive personnel. The Naval Health Research Center also maintains a Service History File for all active-duty personnel. This file contains detailed demographic information for all persons who served on active duty since 1965.

HIV seroprevalence and incidence have been reported in studies of several populations (3-11). These include studies of blood donors (3), migrant farmworkers (4), applicants for mil-

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Table 1

Active-duty HIV seropositive personnel point prevalence rates per 1,000 persons tested by service, all races, both sexes, December 31, 1989

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Service	Number of seropositives	No. of active-duty personnel tested	Point prevalence rate per 1,000
Navy			
Enlisted	977	526,530	1.86
Officer	81	80,542	1.01
Total Navy	1058	607,072	1.74
Marine Corps			
Enlisted	134	175,335	0.76
Officer	8	19,309	0.41
Total Marine Corps	142	194,644	0.73
Total	1,200	801,716	1.50

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Table 2

Active-duty HIV seropositive Navy and Marine Corps officers and enlisted personnel,
point prevalence rates per 1,000 by demographic characteristics, December 31, 1989

Demographic characteristics	Number of seropositives	No. of active-duty personnel tested	Point prevalence rate per 1,000
Sex			
Men	1,174	733,215	1.60
Women	26	68,501	0.38
Total	1,200	801,716	1.50
Age (years)			
17-24	257	388,727	0.66
25-29	427	177,167	2.41
30+	515	235,381	2.19
Unknown	1	441	2.27
Total	1,200	801,716	1.50
Race			
White	691	622,840	1.11
Black	448	130,157	3.44
Other	61	48,719	1.25
Unknown	0	0	---
Total	1,200	801,716	1.50
Education			
<12	53	37,561	1.41
12	846	596,153	1.42
>12	294	156,284	1.88
Unknown	7	11,718	0.60
Total	1,200	801,716	1.50
Length of service (years)			
0.0-1.9	43	205,586	0.21
2.0-3.9	154	171,889	0.90
4.0-5.9	213	75,134	2.83
6.0-10.9	430	156,384	2.75
11+	360	192,723	1.87
Unknown	0	0	---
Total	1,200	801,716	1.50

itary service (5-8), U.S. Army personnel (9), and U.S. active-duty Navy and Marine Corps personnel (10,11).

Point prevalence rates on December 31, 1989, per 1,000 active-duty Navy and Marine Corps personnel according to sex, age, race, education, and length of service were determined and are presented in this report.

Methods

Testing for the presence of antibodies to HIV in Navy and Marine Corps personnel was conducted through 26 Medi-

cal Treatment Facilities. Beginning in July 1989, blood samples taken at these facilities were sent to North American Biological, Inc. for analysis, and seropositive test results were forwarded to the Bureau of Medicine and Surgery, Washington, D.C. Previous to this time, testing was done at the MTF. Verified test results were then sent electronically to the NHRC HIV Central Registry in San Diego, California.

Personnel found to have two successive positive enzyme-linked immunosorbent assays (ELISA), and two positive Western blot assays (results showing at least two of three

Table 3

Active-duty HIV seropositive Navy enlisted personnel, point prevalence rates per 1,000,
by demographic characteristics, December 31, 1989

Demographic characteristics	Number of seropositives	No. of personnel tested	Point prevalence rate per 1,000
Sex			
Men	956	475,888	2.01
Women	21	50,642	0.41
Total	977	526,530	1.86
Age (years)			
17-24	218	263,887	0.83
25-29	353	119,051	2.97
30+	406	142,504	2.83
Unknown	0	88	—
Total	977	526,530	1.86
Race			
White	559	404,589	1.38
Black	364	89,396	4.07
Other	54	32,545	1.66
Total	977	526,530	1.86
Education			
<12	53	36,347	1.46
12	727	429,775	1.69
>12	197	60,402	3.26
Unknown	0	6	0.00
Total	977	526,530	1.86
Length of service (years)			
0.0-1.9	38	138,291	0.27
2.0-3.9	133	114,232	1.16
4.0-5.9	178	51,298	3.47
6.0-10.9	356	105,554	3.37
11+	272	117,155	2.32
Unknown	0	0	—
Total	977	526,530	1.86

bands at p24, gp41, and/or gp120/160), were defined as HIV seropositive. If the Western blot test result was indeterminate (any bands present) then a supplemental test of a different technology was used to determine seropositivity. Individuals referred for evaluation of signs and symptoms during 1983 to 1985 before routine screening began, and who were on active duty on December 31, 1989, were included in this report.

Demographic information for HIV seropositive personnel was obtained by matching social security numbers of seropositive personnel from the HIV Central Registry to the NHRC Service History File (12). This file tracks individuals

throughout their active-duty careers, documenting demographic characteristics, occupations held, training received, promotions, other administrative actions, and hospitalizations.

The population testing negative for the presence of antibodies to HIV was obtained from the NHRC HIV Negative Population Registry which contains results of all ELISA assays and Western blot assays performed on Navy and Marine Corps personnel. Basic identifying information for tested personnel is entered by North American Biologicals, Inc. or the Reportable Disease Data Base of the Defense Eligibility Enrollment Reporting System, and provided to the Naval Health

Table 4

Active-duty HIV seropositive Navy officer personnel, point prevalence rates per 1,000, by demographic characteristics, December 31, 1989

Demographic characteristics	Number of seropositives	No. of personnel tested	Point prevalence rate per 1,000
Sex			
Men	81	72,223	1.12
Women	0	1,319	0.00
Total	81	80,542	1.01
Age (years)			
17-24	0	9,328	0.00
25-29	11	20,147	0.55
30+	69	50,714	1.36
Unknown	1	353	2.83
Total	81	80,542	1.01
Race			
White	66	73,960	0.89
Black	11	3,128	3.52
Other	4	3,454	1.16
Total	81	80,542	1.01
Education			
<12	0	8	0.00
12	0	1,397	0.00
>12	74	67,592	1.09
Unknown	7	11,545	0.61
Total	81	80,542	1.01
Length of service (years)			
0.0-1.9	2	9,763	0.20
2.0-3.9	0	9,959	0.00
4.0-5.9	10	7,917	1.26
6.0-10.9	24	15,711	1.53
11+	45	37,192	1.21
Unknown	0	0	0.00
Total	81	80,542	1.01

Research Center. This information is then matched to the NHRC Service History File, which contains archival demographic information for persons who served on active duty during the study period. Demographic and career history information was updated quarterly and was current through September 31, 1989. Point prevalence rates per 1,000 persons tested were calculated and are reported here.

Results

The following results were based on 1,200 HIV seropositive Navy and Marine Corps officer and enlisted personnel on

active duty on December 31, 1989. This number represents approximately 39.1% of the total population of 3,070 active-duty personnel who have ever been identified as HIV seropositive since 1985.

Prevalence rates varied according to service affiliation and officer or enlisted rank (table 1). Navy enlisted personnel made up the majority (65.7%) of the total population tested as well as the total seropositive population (81.4%) and had a prevalence rate of 1.86 per 1,000. Navy officers had a lower rate of 1.01 per 1,000. Prevalence rates for Marine Corps personnel (enlisted: 0.76, officers: 0.41) were consistently lower

Table 5

Active-duty HIV seropositive Marine Corps enlisted personnel, point prevalence rates per 1,000,
by demographic characteristics, December 31, 1990

Demographic characteristics	Number of seropositives	No. of personnel tested	Point prevalence rate per 1,000
Sex			
Men	129	166,475	0.77
Women	5	8,860	0.56
Total	134	175,335	0.76
Age (years)			
17-24	38	113,382	0.34
25-29	61	32,519	1.88
30+	35	29,434	1.19
Total	134	175,335	0.76
Race			
White	58	126,399	0.46
Black	73	36,637	1.99
Other	3	12,299	0.24
Total	134	175,335	0.76
Education			
<12	0	1,206	0.00
12	119	163,180	0.73
>12	15	10,859	1.38
Unknown	0	90	0.00
Total	134	175,335	0.76
Length of service (years)			
0.0-1.9	2	56,428	0.04
2.0-3.9	21	45,680	0.46
4.0-5.9	24	14,218	1.69
6.0-10.9	49	30,722	1.59
11+	38	28,287	1.34
Unknown	0	0	--
Total	134	175,335	0.76

than Navy rates.

Prevalence according to demographic characteristics. Point prevalence rates were related to several demographic characteristics (table 2). HIV seropositive personnel were predominantly men (97.8%), and the prevalence rate for men was 4.2 times higher than the rate for women (1.60 vs 0.38).

While approximately half of the total population was between 17 and 24 years old, this age-group had the lowest HIV seropositivity rate (0.66). The seropositivity rate for whites, and for other races were both lower than the total Navy rate. In contrast, blacks had a prevalence rate over 2.3 times higher than the total Navy rate.

The educational level of the active-duty population is overwhelmingly in the high school graduate category (93%). Overall, educational level attained had little effect on HIV seroprevalence rates.

Navy enlisted personnel. As expected, because of the predominance of Navy enlisted personnel (81.4%) in the population tested, the patterns of HIV seroprevalence in this population were similar to those observed for the total Navy and Marine Corps (table 3). The only differences in prevalence by demographic characteristics were for education. Enlisted personnel with greater than 12 years of education had a prevalence rate approximately twice that of the other two education

Table 6
Active-duty HIV seropositive Marine Corps officers point prevalence rates per 1,000,
by demographic characteristics, December 31, 1989

Demographic characteristics	Number of seropositives	No. of personnel tested	Point prevalence rate per 1,000
Sex			
Men	8	18,629	0.43
Women	0	680	0.00
Total	8	19,309	0.41
Age (years)			
17-24	1	2,130	0.47
25-29	2	5,450	0.37
30+	5	11,729	0.43
Unknown	0	0	--
Total	8	19,309	0.41
Race			
White	8	17,892	0.45
Black	0	996	0.00
Other	0	421	0.00
Total	8	19,309	0.41
Education			
<12	0	0	--
12	0	1,801	0.00
>12	8	17,431	0.46
Unknown	0	77	0.00
Total	8	19,309	0.41
Length of service (years)			
0.0-1.9	1	1,104	0.91
2.0-3.9	0	2,018	0.00
4.0-5.9	1	1,701	0.59
6.0-10.9	1	4,397	0.23
11+	5	10,689	0.50
Unknown	0	0	--
Total	8	19,309	0.41

groups (3.26 vs 1.46 and 1.69).

Navy officers. The seropositivity rates for Navy officers by age, education, and length of service, were consistently below the total Navy rate of 1.50 (table 4). The HIV seroprevalence rate for black officers (3.52) was approximately four times higher than that for whites (0.89) and other races (1.16). No currently active-duty female Navy officers have tested HIV seropositive. The overall prevalence rate for Navy officers (1.01) was below the total Navy rate.

Marine Corps enlisted personnel. Consistently low prevalence rates were seen for Marine Corps enlisted personnel

in comparison to Navy personnel (table 5). The overall seropositive rate was 0.76 and most rates for demographic characteristics were between 0.00 and 2.00. Again, one exceptionally high rate was seen for blacks (1.99), which was four times that of whites (0.46). The 25-29 year age-group also had a high prevalence rate (1.88). Of the 134 seropositive Marines identified, five were female. Although based on few cases, the rate in women (0.56) was about 28% lower than in Marine Corps men (0.77). This contrasts with a rate in Navy women of 0.41, which is 80% lower than in Navy enlisted men (2.01).

Marine Corps officers. All 8 HIV seropositive marine corps officers were white males with more than 12 years of education (table 6). The overall rate in Marine Corps officers was low (0.41) in comparison to all other personnel categories investigated.

Discussion

This report provides point prevalence rates of HIV seropositivity in U.S. Navy and Marine Corps personnel on active duty on December 31, 1989, by demographic characteristics. Point prevalence rates result from both the number of HIV seropositive persons identified and from patterns of retention of HIV seropositive personnel on active duty. Unlike HIV seroconversion rates which reflect the number of new cases of HIV infection occurring in a population over a specified period of time, point prevalence rates are directly affected by attrition of HIV seropositive personnel. The majority of HIV seropositive personnel who have been identified since testing began are no longer on active duty and are, therefore, not included in this study. If, for example, policies of retention differ between services, then point prevalence rates of HIV seropositivity as a measure of the magnitude of the occurrence of HIV infections among the services would not be directly comparable. The current policy of the U.S. Navy and Marine Corps is to retain HIV seropositive personnel on active duty as long as job performance is not adversely affected.

The overall prevalence rate of HIV infection of 1.50 per 1,000 persons reported here was the same as the prevalence rate reported by the Army for civilian applicants for military service in 1985-1986 (1.5 per 1,000) (6,9) and only slightly higher than the prevalence rate reported for all U.S. military services combined in 1988 of 1.3 per 1,000 (10).

Point prevalence rates for the the Navy and the Marine Corps populations should not be generalized to the total U.S. population for several reasons. As discussed above, many HIV seropositive personnel are no longer on active duty and are not included in this study. The age, sex, and marital status structure of the Navy and Marine Corps population, which is predominantly young, single, and male, is not representative of the U.S. population. Applicants for service have been screened since October 1985, and HIV positive applicants have been barred from entrance into the Navy and Marine Corps. High risk behaviors for acquisition of HIV infections, specifically, homosexuality and illicit drug use, are prohibited. These factors, which are operating in the military setting, but not in the general population, make generalizations from the Navy and Marine Corps populations to the broader U. S. population tenuous.

However, it is informative to compare patterns of the occurrence of HIV infection in different sub-populations, both military and civilian. In comparing the demographic patterns seen in this study with those reported in other studies certain consistencies became evident. Prevalence studies in different populations have reported higher rates in men than women (3-5,10-12). The ratio of male to female seroprevalence rates varied for different populations: 2.6 for blood donors in Cali-

fornia (3), 2.3 for migrant farmworkers (4), 2.7 for recruit applicants (5), 1.8 for Army personnel (9), 3.5 for all services (10), and in this study, 4.2 for the Navy and Marine Corps.

Another similarity between the findings in this population and other populations is the higher prevalence of HIV seropositivity in blacks (4-10). This is consistent with an incidence survey by the Centers for Disease Control which reported the cumulative incidence of AIDS among blacks and hispanics to be over three times the rate for whites (12).

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